

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte GARY K. MICHELSON

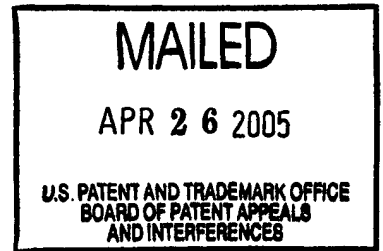
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Appeal No. 2005-1002  
Application No. 09/991,247

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ON BRIEF

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Before FRANKFORT, MCQUADE, and NASE, Administrative Patent Judges.

Per Curiam

Gary K. Michelson appeals from the final rejection (mailed January 30, 2004) of claims 1 through 3 and 5 through 88, all of the claims pending in the application.<sup>1</sup>

THE INVENTION

The invention relates to "bone dowels to be placed across the intervertebral space left after the removal of a damaged

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<sup>1</sup>Claims 25 through 28, 56 through 59 and 85 through 88 have been amended subsequent to final rejection.

spinal disc" (Specification, page 1). Representative claim 1 reads as follows:

1. A system including an interbody spinal implant for insertion at least in part into an implantation space formed across a disc space between adjacent vertebral bodies of a human spine and into at least a portion of the endplates of the vertebral bodies, said implant comprising:

a body having a leading end for insertion first into the disc space and a trailing end opposite said leading end;

opposite upper and lower surfaces adapted to be placed in contact with and to support the adjacent vertebral bodies;

opposite sides between said leading and trailing ends and between said upper and lower surfaces, said upper and lower surfaces being arcuate in a direction from one of said opposite sides to another of said opposite sides;

a plurality of forward-facing projections extending from said upper and lower surfaces for engaging the adjacent vertebral bodies, at least one of said projections having a leading face and a rearward portion, said leading face and said rearward portion each having a length and a slope, the length of said leading face being longer than the length of said rearward portion, the slope of said rearward portion being steeper than the slope of said leading face;

an opening passing through said upper and lower surfaces for permitting for the growth of bone from adjacent vertebral body to adjacent vertebral body through said implant; and

said implant being manufactured from a composite of cortical bone particles and at least one bioresorbable material, said cortical bone particles and said at least one bioresorbable material being combined to form a machinable material from which said implant is manufactured.

#### THE PRIOR ART

The references relied on by the examiner to support the final rejection are:

Michelson  
(Michelson '437)

5,484,437

Jan. 16, 1996

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Michelson (Michelson '973)	5,860,973	Jan. 19, 1999
Boyce et al. (Boyce '939)	5,899,939	May 04, 1999
Boyce et al. (Boyce '187)	6,294,187	Sep. 25, 2001

#### THE REJECTIONS

Claims 1 through 3, 5 through 16, 18, 23 through 49, 55 through 78 and 84 through 88 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Michelson '973 in view of Boyce '187.

Claims 17, 50 and 79 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Michelson '973 in view of Boyce '187 and Boyce '939.

Claims 19 through 22, 51 through 54 and 80 through 83 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Michelson '973 in view of Boyce '187 and Michelson '437.

Attention is directed to the main and reply briefs (filed August 04, 2004 and January 04, 2005) and answer (mailed November 04, 2004) for the respective positions of the appellant and examiner regarding the merits of these rejections.

#### DISCUSSION

Since the appellant, stating that "[t]he claims stand or fall together" (main brief, page 5), does not argue separately

the patentability of any particular claim apart from the others, all of the other appealed claims shall stand or fall with representative claim 1. See In re Young, 927 F.2d 588, 590, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991); In re Wood, 582 F.2d 638, 642, 199 USPQ 137, 140 (CCPA 1978).

Michelson '973, the examiner's primary reference, discloses a spinal fusion implant for insertion into a vacated disc space between two adjacent vertebrae. The examiner relies on the embodiment shown in Figure 10 wherein the implant 400 comprises a body having an arcuate upper surface 402, an arcuate lower surface 404, flattened side portions 406, openings 408 passing through the upper and lower surfaces and ratcheting extending from the upper and lower surfaces.

It is not disputed that Michelson '973 teaches, or would have suggested, a spinal implant system responding to all of the limitations in representative claim 1 except for those requiring the implant to be manufactured from a composite of cortical bone particles and at least one bioresorbable material combined to form a machinable material. In this regard, Michelson '973 teaches that the spinal fusion implant "is made of material appropriate for human implantation such as titanium and/or may be made of, and/or filled and/or coated with a bone ingrowth inducing material such as, but not limited to, hydroxyapatite or hydroxyapatite tricalcium phosphate or any other osteoconductive,

osteoinductive, osteogenic, or other fusion enhancing material" (column 5, line 66, through column 6, line 5).

To remedy the foregoing deficiency in Michelson '973, the examiner turns to Boyce '187.

Boyce '187 discloses a number of osteoimplants including a cylinder or dowel 70 similar in type to those disclosed by Michelson '973 for insertion between adjacent vertebrae (see Figures 1d and 2b; column 1, lines 26 through 30; and column 14, line 6, through column 15, line 5). To manufacture the implants, Boyce '187 expressly contemplates a machinable composite of cortical bone particles (see column 4, lines 26 through 52) and biocompatible components such as bioabsorbable materials (see column 7, line 55, through column 12, line 10). Boyce '187 lists a number of advantages afforded by such osteoimplants including load-bearing strength, the presence of pores which permit revascularization and incorporation by the host, an osteogenic quality which promotes new host bone tissue formation, and easy fabrication of osteoimplants having different sizes and/or shapes (see, for example, column 2, lines 7 through 33).

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references

would have suggested to those of ordinary skill in the art. In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981).

In the present case, the combined teachings of Michelson '973 and Boyce '187 would have suggested manufacturing the spinal implant 400 disclosed by Michelson '973 from a machinable composite of cortical bone particles and at least one bioresorbable material as disclosed by Boyce '187, thereby arriving at the subject matter recited in claim 1. The appellant's position that the appealed rejections are unsound because this reference combination rests on impermissible hindsight is not persuasive. Michelson '973 and Boyce '187 pertain to similar spinal implants and one of ordinary skill in the art would have readily appreciated the implant materials disclosed by Boyce '187 to be art-recognized alternatives to the implant materials disclosed by Michelson. The description of such materials by Michelson '973 expressly leaves open the possibility that other materials may be used and does not in any way teach away from the particular materials disclosed by Boyce '187. The advantages described by Boyce '187 for these materials would have furnished the artisan with ample suggestion or motivation to utilize same, e.g., a machinable composite of cortical bone particles and at least one bioresorbable material, to manufacture the implant disclosed by Michelson '973.

Accordingly, we shall sustain the standing 35 U.S.C.

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§ 103(a) rejection of claim 1 as being unpatentable over  
Michelson '973 in view of Boyce '187.

As claims 2, 3 and 5 through 88 stand or fall with claim 1,  
we also shall sustain the standing 35 U.S.C. § 103(a) rejection  
of claims 2, 3, 5 through 16, 18, 23 through 49, 55 through 78  
and 84 through 88 as being unpatentable over Michelson '973 in  
view of Boyce '187, the standing 35 U.S.C. § 103(a) rejection of  
claims 17, 50 and 79 as being unpatentable over Michelson '973 in  
view of Boyce '187 and Boyce '939, and the standing 35 U.S.C.  
§ 103(a) rejection of claims 19 through 22, 51 through 54 and 80  
through 83 as being unpatentable over Michelson '973 in view of  
Boyce '187 and Michelson '437.

#### SUMMARY

The decision of the examiner to reject claims 1 through 3  
and 5 through 88 is affirmed.

No time period for taking any subsequent action in  
connection with this appeal may be extended under 37 CFR  
§ 1.136(a).

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AFFIRMED

*Charles E. Frankfort*

CHARLES E. FRANKFORT  
Administrative Patent Judge

*John P. McQuade*

JOHN P. MCQUADE  
Administrative Patent Judge

*Jeffrey V. Nase*

JEFFREY V. NASE  
Administrative Patent Judge

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